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Speculations on the postnatural: Restoration, accumulation, and sacrifice at the Salton Sea

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Abstract: Using a regional political ecology lens, this paper explores emerging geographies and politics of a “postnatural” ecomodernist turn in mainstream environmentalism. We examine the unfolding case of ecological restoration and renewable energy development at Southern California’s Salton Sea. Ambitious proposals to restore the massive, increasingly degraded lake (and finance restoration) by reengineering it as a hub for geothermal energy generation and high-tech green industry hinge upon the ambiguity and malleability of restoration in an environment long classified as postnatural. These plans coincide with a broader rush on renewable energy sites in the California desert, and mounting conflicts over water and land with legacy agro-industrial interests. The case illustrates significant problems within postnatural environmentalism. First, it demonstrates how theorizations of the postnatural can intersect with green capitalist projects of re(e)valuation and development, as the Sea’s managers manipulate environmental framings to support accumulation-minded projects, and accumulation imperatives swamp other functionalities of restoration. Meanwhile, despite the flourishing of postnatural discourses, the “pristine” is shown to do continued work as the Sea becomes a sacrifice zone for development deflected from better-protected spaces. This postnatural positioning has rendered the Salton Sea vulnerable to neoliberal austerity and speculation in ways that compromise its future existence.

Keywords: California, political ecology, postnatural, ecomodernism, restoration, renewable energy

Introduction

Today's ongoing upheaval in environmental conservation and restoration poses complex questions for critical environmental scholars. Contemporary ecomodernist voices seek to crystallize a long-building shift: growing environmentalist interest in (or resignation to) engineering *new* natures on and for a “used” planet (Kareiva et al. 2012; Asafu-Adjaye et al. 2015; Ellis et al 2013). This shift toward so-called “postnatural” environmentalism is evident across a broad landscape that includes, for example, wetland and stream restoration (Robertson 2000; Lave et al. 2010), experiments in rewilding (Robbins and Moore 2013; Lorimer and Driessen 2016), and biomimicry (Goldstein and Johnson 2015). In the increasingly influential movement toward postnatural ecomodernism, technofuturist innovation becomes the key to green capitalist growth (Goldstein and Tyfield 2017; Knuth 2017; Knuth 2018). Meanwhile, deliberate ecological design replaces purportedly doomed efforts to ring-fence or reconstruct “pristine” non-human natures – imaginaries soon to be swamped by the planetary destabilizations and ecological novelty of the Anthropocene (Collard et al. 2015; Lorimer and Driessen 2016).

Geographers and political ecologists have struggled to respond to this rising postnatural ecomodernist paradigm. On the one hand, it echoes political ecology's longstanding critiques of preservationism's dualistic fallacies, backward-looking nostalgia, and exclusionary politics (e.g., Cronon 1996; McAfee 1999). On the other hand, it recasts these critiques as permission to embrace overt anthropocentric utilitarianism and neoliberal accumulation (Robbins and Moore 2013; Robbins 2014; Collard et al. 2015; Mansfield and Doyle 2017; and see Latour 2011, 2015; Robbins and Moore 2015). Critical geographers seek openings for a more liberatory, inclusive compositionism (Latour 2010), while warning that the new environmental relativism is already

enabling opportunistic market schemes and political manipulation. Increasingly, they recommend political ecology's existing toolkit of situated, critical, contextual analysis for evaluating and responding to these dilemmas as new postnatural configurations unfold in practice. As Mansfield and Doyle (2017) put it, "our new task is to investigate how nondualism works, just as we need to continue to investigate how dualism works" (p. 26).

Here, political ecology has an important task, one we take up in this paper. We argue that the emerging geographies of socio-spatial difference produced by postnatural and ecomodernist approaches to environmentalism have been underexplored. Abstract imaginaries such as a planetary "rambunctious garden" (Marris 2013) or *terra nullius* obscure a world of entrenched difference and unevenness – one only fitfully illuminated by references to familiar second natures (Smith 2010), "monsters" (Latour 2011), or sites of "experimental conservation theatre" (Robbins and Moore 2013). Political ecologists must more comprehensively and empirically explore what kinds of spaces are now being turned over to ecomodernist projects and postnatural design – and how, why, and with what impacts for whom. Conversely, we must examine sites where the new postnaturalism is being *resisted*, and assemblages and legal-regulatory apparatuses that are defending established ideological and material terrain (e.g., Collard et al. 2015). Finally, we must examine how these spaces interact and collide within broader landscapes, and what spatial hierarchies and "sacrifice zones" (Hecht 2005; Klein 2014) these relations generate.

In this paper, we turn a regional political ecological lens onto these questions, expanding upon an approach pioneered by Mansfield et al. (2015) (and see Walker 2003). We consider an environment framed as an eccentric and increasingly a monstrous (Latour 2011) human creation throughout its modern history: Southern California's Salton Sea. Produced in an early 20th

century irrigation engineering accident, for a hundred years this 350-square mile lake (California's largest) has been excluded from statutory environmental protections (Rudy 2005; Cantor 2016). Agricultural pollution, hypersalinization, and embattled water transfers have made the Sea increasingly noxious and hazardous to the human and more-than-human ecologies in and around it. In response, the Salton Sea's managers have advanced a series of design and engineering proposals under the banner of ecological restoration, an often-ambiguous and inconveniently costly undertaking. Increasingly, they have turned to a raft of private partners and market schemes to populate and finance these visions, seeking a version of Salton Sea restoration with the power to pay for *itself*. The Salton Sea's case offers a useful window into the broader turn towards the postnatural in the context of the emerging green economy.

First, the case highlights how postnatural utilitarianism can assume multiple valences within a single project and place. The Sea's proposed restoration incorporates not only ecological functionality, biodiversity conservation, and a range of anthropocentric uses, but also explicit programs for capitalist accumulation. The various "versions" of restoration (Mansfield et al. 2015) articulated all fall within a context of neoliberal austerity and multi-scalar political conflict (see also Robertson 2000; Lave et al. 2010). We explore one proposed engine of restoration-as-accumulation, a plan to develop the Sea's geothermal energy resources for industrial production and recirculate profits to finance adjacent habitat construction. This speculative green capitalist project at the Salton Sea can be placed within a broader context of attempts to extract value through repairing and repurposing capitalism's own degraded "wastelands" (Gidwani and Reddy 2011; Fairhead et al. 2012; Dillon 2014; Goldstein 2014). We demonstrate the ways in which the plan echoes familiar processes of capitalist resource discovery and neoliberal speculation, introducing new calculations of speculative risk into an already vulnerable socio-ecosystem.

Second, we consider the ecomodernist re(e)valuation of the Salton Sea within a regional political ecological context of contestation over land and water resources. The Sea's fate—and along with it, the health of the birds, fish, and humans who depend upon the water and air—is bound up in long-running water and land struggles in the rural US West, including an early 21st century boom in utility-scale solar and wind energy production and a rush on potential development sites (Brannstrom et al. 2011; Pasqualetti 2011; Mulvaney 2013 and see Bridge et al. 2013; Huber and McCarthy 2017). Renewable energy interests are further complicating Western land politics as they contend for space with legacy agriculture and resource industries, urban developers, and preservationists (McCarthy 2002; Walker 2003). Increasingly, managers promote the already-“disturbed” Sea as a uniquely convenient *tabula rasa* for low-conflict renewables siting, particularly as preservationists successfully contest unrestrained renewable energy development on “pristine” public lands. We argue that this move to shift production away from protected areas towards anthropogenic landscapes creates a sacrifice zone in Hecht's (2005) sense of “deflected development” (Brannstrom 2009; Oliveira and Hecht 2016). Moreover, the area around the Salton Sea is *doubly* a sacrifice zone: increasingly sacrificed in Bullard's (1990) environmental injustice sense as well (and see Klein 2014; Voyles 2017): those who face the worst consequences of the Sea's decline include largely low-income agricultural workers whose health is jeopardized by its mounting air quality impacts (Cohen 2014). The Salton Sea, as an anthropogenic landscape, is currently being rendered an “other” that is subordinate to pristine lands. This analysis demonstrates in concrete ways that, despite mainstream implications, we are far from attaining a universal shift to a global postnatural state with evenly distributed benefits—and harms.

Our examination draws on fieldwork which took place in 2012-2015 and included over thirty in-depth semi-structured interviews with policymakers, water agency officials, local and state government representatives, environmental advocates, water law experts, and others involved in the Salton Sea and/or state-level water policy. Further research has included analysis of technical reports and planning documents, regional news sources, legal briefs, and other textual sources on water, energy, and land development in the Salton Sea region.

California water battles and the re(e)valuation of a postnatural space

Understanding the Salton Sea and its position in California politics requires taking on its peculiar history as an anthropogenic landscape. The Sea's regulatory treatment as a postnatural space, an ecology outside the bright line distinctions and protections of California environmental law, stems from its status as an "accidental" and "unnatural" feature (Cantor 2016). In this section, we describe the history and recent events shaping this unnatural landscape, setting the stage for our discussion of postnatural restoration and related regional political-ecological struggles.

Over the course of history, what is now the Salton Sea has alternately been a freshwater lake, saline sea, or dry desert playa depending on the historically fluctuating course of the Colorado River. Its modern form, and key parts of its present-day cultural and legal identity, were fixed just over a century ago (DeBuys 2001). In 1905, irrigation engineers inadvertently diverted the entire flow of the Colorado to the Sink for several years. The massive lake that resulted, today's Salton Sea, has remained a water body due to ongoing agro-capitalist production and its wastes: the Sea is officially designated as a sump, a dump for agricultural runoff water and pollutants from surrounding industrial-scale agriculture in the Imperial and Coachella Valleys.

The Salton Sea's monstrosity (Latour 2011), in the form of mounting pollution, noxiousness, and an increasingly surreal aesthetic, has also shaped its cultural and political life. In the 1950s, opportunistic developers framed the Sea as a mecca for sport fishing and recreation. Shoreline real estate speculation joined the desert California boom that made Palm Springs to the Sea's north a year-round resort, as developers platted over 10,000 residential lots in major settlements like Imperial County's Salton City. However, Salton City was largely abandoned in the 1970s, and the Sea's other boomtowns proved similarly short-lived. Without a natural outlet, evaporation concentrated an ongoing inflow of agricultural pollutants to produce algal blooms, eutrophication, and a powerful rotten-egg stink (Cohen et al. 1999). Meanwhile, large-scale die-offs progressively culled freshwater fish species that had been introduced at midcentury. Onshore, the Sea's urban settlements have lapsed into a decaying landscape of post-apocalyptic vistas, drawing photographers who document beaches made of fish and bird bones alongside collapsed buildings and roads, street signs, and telephone poles laid out for housing never built.

Wastewater politics and postnatural value

Over the last few decades, the Sea has become a frontline of California water battles in the Anthropocene. The Sea's degradation is now rapidly accelerating due to recent water transfers which ultimately threaten to revert it to dry playa, with devastating impacts on wildlife habitat as well as air quality consequences for those who live in the region (Cohen 2014). These water transfers are the result of agreements negotiated in the early 2000s, when California was regularly exceeding its legal allotment of water from the Colorado River, already the largest of any state. Facing rapid urbanization and new demand across the Southwest, the US Department of the Interior pressured California to come into compliance. Simultaneously, California faced

growing water demand from its own coastal cities.¹ The powerful Imperial Irrigation District (IID), a large holder of Colorado River water rights² and a major player in the Salton Sea's ongoing management, came under particular heat in these struggles. Although environmentalists and competing water claimants have long decried the inefficiency of irrigating the arid Imperial and Coachella Valleys, the IID had successfully defended its large water claim for decades. However, in 2003, the Quantification Settlement Agreement (QSA) reduced California's use of the Colorado River – which included leasing IID's Colorado water rights to the San Diego County Water Authority (SDCWA). The IID is meant to use money from these sales to cut water “waste” by implementing efficiencies in water distribution and irrigation. More immediately, the IID has conserved water via fallowing, simply taking agricultural land out of production (Perry 2013).

Unsurprisingly, the IID's concession has been unpopular with many of the Imperial Valley's farmers. The region's abundant and cheap water has helped it become a nationally dominant supplier of winter fruits, vegetables, and other crops, with crop sales topping \$1.3 billion annually (US Census of Agriculture 2012). This outsize agricultural prosperity has produced a highly uneven landscape, sharply split along class lines between a small, wealthy group of landowners, many absentee, on about 500 farms³ and a poor, predominantly Latino, laboring population.⁴ The region's high unemployment rate, twenty-one percent in 2016 (Corcoran and Segura 2016), reflects a fluctuating in- and outflow of farmworkers from Mexico, as well as residents living off the grid in unincorporated communities. The Imperial Valley's agricultural elite speaks for this broader population with a heavy dose of irony. Nonetheless, farmer-activists have protested water transfers as sacrificing their rights and the Valley's irrigated agricultural future to distant urban interests.

As the QSA's significant reductions to the agricultural runoff feeding the Salton Sea take full effect this year,⁵ the state's power to determine what constitutes "wasted" water usage has very real material consequences (Cantor 2017). With cuts to its inflow, the Salton Sea's salinity will rapidly increase, threatening remaining fish and the bird species dependent upon them.

Moreover, as the Sea evaporates more quickly than it is replenished, projections suggest it will shrink dramatically and (re)expose thousands of acres of playa to blowing wind. Fine dust from exposed lakebed, some laced with historical pollutants, threatens to create a serious air quality hazard, a fresh locus of environmental injustice in an already unequal region. If unmitigated, Salton Sea dust storms might cause as much as \$37 billion in damage in the form of increased asthma and other health impacts over the next 30 years (Cohen 2014).

Today, these political struggles, environmental degradation, and human health risks are fueling efforts to reimagine the Salton Sea as an anthropogenic but nonetheless functional ecosystem worthy of protection. Environmentalist advocates have argued that despite its "artificial" status, the Sea's habitat has become increasingly necessary to millions of migrating birds on the Pacific Flyway, ones left with few other options in a region that has developed over many of its "natural" wetlands (Wilson 2010). In an interview, an ecologist explains this habitat importance, echoing concepts of the postnatural (although without using the more academic terminology directly):

The Salton Sea was an accident in the historical time. It's well understood that over geologic time the river has wandered around, and the Salton Sea had water in it, and then it didn't have water in it. Now it has water in it. It was a human caused accident rather than a change of the natural flowing of the river, but there it is. The issue for it really is

when it comes to the habitat... The habitat issue is very real, regardless of whether it's an artificial lake or whether it's a natural lake.

Critically, this framing of ecological value in an anthropogenic landscape, which is at the core of what we refer to here as postnatural, has gained significant formal support from the state. As we discuss in the next section, state restoration mandates addressing concerns of habitat and air quality have sparked a raft of explicitly capitalist designs upon the restoration project.

Ambiguities and vulnerabilities of “restoration” at the Salton Sea

In negotiations over the QSA, the State of California passed the Salton Sea Restoration Act of 2003, Senate Bill (SB) 277. In this Act, the California state government promised to come up with a durable plan to restore the Sea—and, crucially, to fund that restoration. However, fifteen years after the QSA and Salton Sea restoration were agreed upon, promised restoration activities have barely begun. In this section we argue that the difficulties in conceptualizing, funding, and actually constructing restoration projects at the Sea are not only a result of budget constraints and neoliberal austerity, but also tied to ongoing debates and ambiguities about what restoration means in a postnatural landscape (Robbins 2014; Collard et al 2015; Mansfield et al 2015).

A primary barrier to restoration has been the daunting cost of reengineering a landscape of the Salton Sea's scale. A 2006 California water bond had allocated \$54 million for Salton Sea restoration. However, a year later, an estimate for the Sea's comprehensive restoration cost came in at a whopping \$8.9 *billion* (PEIR 2007). This funding demand arrived at an inopportune time. As California's share of the US housing bubble began to deflate in the mid-2000s (Bardhan and Walker 2011), and the financial system as a whole collapsed in 2008, California unsurprisingly

faced a deep state budget crisis. As the state recovered (under ongoing austerity), funding for the Salton Sea failed to solidify, as the state considered and rejected a series of restoration plans and reshuffled formal authority for managing the Sea and its rehabilitation.

In the face of fifteen years of delays and inaction from the state, actors involved in management of the Salton Sea, including landowners, irrigation district board members, developers, and government agency employees, have grown increasingly frustrated – especially as the IID has reached the end of QSA-required mitigation water (supplied to the Sea until 2018, it has until now somewhat postponed the Sea’s ecological decline). For years, regional actors unsuccessfully pushed the state government to become more active in Salton Sea management, arguing that since the state had pressed for water transfers and promised restoration in the negotiation of the QSA, it has a legal responsibility to handle related damages. However, as a state government agency employee described in an interview:

There's been a lot of time and money spent on planning and very little done on the ground. They face a serious problem down there... There was an expectation by the locals for many years that the state was just going to come in on a white horse and just solve the problem. Just spend whatever it takes to make it happen. The legislature has demonstrated that it's not willing to just spend anything to resolve the issues at the Sea.

Belatedly, some state restoration funding has begun to materialize, alongside a new comprehensive plan with a much-reduced price estimate of \$3 billion (Hayden 2016) – and, most recently, a still-cheaper plan with a cost estimate of \$383 million. In July 2016, the State of California allocated \$80.5 million for building canals and wetlands along the Salton Sea shoreline, and several small projects have begun. In September 2016, the Obama Administration pledged an additional \$30 million in federal funding (now in question after the 2016 Presidential

election). \$200 million in further funding now awaits ballot approval from California voters. As the state dramatically scales back proposed ambitions for restoration, the Sea's funding shortfall has shrunk accordingly – but at the time of writing, remains wide and uncertain, which hampers long-term planning efforts.

The Salton Sea's restoration funding dilemma – and, as we discuss in the next section, its proposed solutions – are not just a product of austerity budgeting. They are also deeply rooted within continuing debates about the *nature* of restoration. Determining what restoration means in a postnatural space like the Salton Sea is an overtly political question (see Robbins 2014) – one with real stakes. The Salton Sea Restoration Act called for a plan that would attain “restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea” along with protection of air and water quality. These requirements are vague, strategically so. For example, the language of restoring habitat for ‘historic levels’ of fish and wildlife does not specify a point in history, leaving the baseline for restoration ambiguous – a major issue in a historically shifting, non-equilibrium ecosystem. What should the Salton Sea be restored *to*? Moreover, the requirements raise debates about how to allocate responsibility – how to measure, and how to formally separate out liability – for the further deterioration of an ecosystem already declining before the QSA water transfer occurred. This vague mandate has been interpreted to license to various “versions” of a future restored Sea (see Mansfield et al. 2015). Proposals have included Promethean visions, such as recurring proposals for transnational pipelines to pump seawater from the Sea of Cortez into the basin. While the California Natural Resources Agency's original \$8.9 billion restoration plan (PEIR 2007), developed to accompany the QSA, did not include pumped seawater, it did propose a complex civil and environmental reengineering of the Sea and its ecosystems. The plan included

construction of a massive rock berm around a reduced-size Sea, with a system of dikes, channels, and pumps for filtering salt and pollutants to a brine pool at the lake's center. The rest of the basin would be "restored" either to dry lakebed, with various measures such as irrigated brush planting to suppress dust, or a series of shallow pools and constructed areas of wetland habitat to re-cover exposed playa. Subsequent restoration plans have accepted a future of shrinking inflows and a far smaller Sea. State proposals for a scaled-back partial restoration include the 2011 Salton Sea Species Conservation Habitat Project and, most recently, its newly cheap(er) \$383 million restoration plan, the 2017 Salton Sea Management Program.⁶ This latest version of restoration at the Sea touts a "pragmatic" and "incremental" approach, diverting freshwater to gravity-fed canals and constructed ponds adjacent to the Sea's current shore, to be built on a gradual schedule if and when funding comes through. Over the next ten years, the plan aims to cover 29,800 acres of the Sea's bed in this constructed habitat—about 60 percent of what is estimated to be exposed by 2028 (James 2017).

These designs embody significant differences in vision and scope; proponents and critics will no doubt continue to clash over the sufficiency of various plans. Strikingly, however, each of these designs for the Sea has historically billed its project *as* restoration. More traditionally "Edenic" versions of restoration are certainly not without arbitrary baselines and questionable re-creations of past conditions (Robbins 2014). However, Salton Sea restoration has demonstrated relativity on a different scale in the thoroughness of its departure from historical baselines. In a context in which *any* restoration might be more accurately labeled as large-scale ecological engineering, the rhetoric of restoration has proven flexible, or indeterminate, enough for divergent projects to claim its mantle. Today, the Sea exemplifies broader trends in postnatural restoration practice: as historical baselines (and aspirations to maintain them) erode, they are replaced by increasingly

unrestrained ecomodernist design (e.g. Robertson 2000; Lave et al. 2010; Mansfield and Doyle 2017).

An entrepreneurial re(e)valuation: Geothermal-for-restoration in a renewables boom

The Salton Sea’s conceptual and material malleability as a postnatural space does not merely introduce convenient relativity into an intractable political mandate. Shifting understandings of what restoration can mean at the Salton Sea have also provided an opening for a specific *kind* of solution: a turn to green capitalism as a way to ostensibly save the Sea. Renewable energy development is increasingly gaining traction as a promising entrepreneurial scheme for Salton Sea restoration. In this section, we describe the proposed geothermal-for-restoration project, situating it within broader green energy development efforts across the region. We argue that this proposal demonstrates Johnson’s (2010) point that an opportunistic capitalism is well-capable of “accumulation by degradation.” In this case, entrepreneurial proposals capitalize on the Sea’s ambiguous status in far-reaching ways – and, in doing so, introduce their own set of speculative vulnerabilities.

Since the late 2000s, entrepreneurs – and, critically, regional government entities like the IID – have proposed a series of entrepreneurial schemes and public-private partnerships that claim to be able to make the Salton Sea’s restoration pay for *itself*. These actors have sought to define the Sea as a frontier for resource discovery and accumulation – and to advance versions of a “restored” Sea that meet the needs of these projects. As a local developer explained in an interview:

There's a contingent of us in the private sector, renewable energy folks, real estate development folks, even environmental folks, who believe that we locally can take control of the Sea, invest in the Sea, and if we can do a paradigm shift to start looking at the Sea as an economic resource, we can probably figure out how to fund it. Fund the restoration effort without reliance, without significant reliance for the majority of that funding on the government.

These public-private proposals have at times been overtly problematic. For example, regional governments both south and north of the Salton Sea have recurrently chased the possibility of new lakeside real estate development as a way of paying for restoration. The logic is that if the Sea is restored, land values along the shore will appreciate radically, and some of the putative profits of this potential growth can be diverted back toward restoration activities – a seemingly virtuous cycle of public benefit and private gain. One such scheme proposed to pioneer “natural resource tax increment financing” (Cunningham 2016), an adaptation of “self-financing” practices in urban redevelopment (Weber 2002). Many in and beyond the region have critiqued these real estate proposals as unsustainable and unrealistic. Not only do they inherit a long history of failed real estate development at the Sea, their success requires the alignment of multiple uncertain conditions. Tying restoration to land value speculation introduces serious risks that both the development *and* the restoration could fail. Based on this critique and others, such proposals are currently foundering amid legal challenges.

Desert California's renewable energy boom

Renewable energy development represents a more feasible entrepreneurial project linked to Salton Sea restoration. More broadly, new development politics are currently sweeping desert California as the region transforms into a globally significant center of renewable energy development. As a surge of large-scale solar projects transform places like the Imperial Valley (and sparks fresh political conflicts), local politicians have seen a unique opportunity to fund Salton Sea restoration – and to leverage a new claim upon a state that they argue has sacrificed and abandoned the region. The IID and its regional partners⁷ have argued that prioritizing large sections of newly exposed Salton Sea playa for renewable energy projects, especially geothermal power, is key to funding habitat construction and hazard reduction elsewhere at the Sea. Even as the State of California seeks belatedly to assemble more conventional restoration funding, political backers have continued to push this development agenda.

To contextualize these efforts, in the mid-2000s, California entered a new era in its efforts to develop utility-scale alternatives to fossil and nuclear power. The state has for decades been a global leader in renewable energy, with roots in its 1960s-1970s environmental counterculture (Knuth 2018). This role has deepened in policy applications, including California's climate commitments under the Global Warming Solutions Act of 2006 (AB 32). A recent expansion in California's Renewables Portfolio Standard (RPS) is particularly noteworthy. Under 2002 legislation, the RPS required California's electric utilities to derive a certain percentage of their yearly retail sales from renewable energy sources, including solar photovoltaic and thermal, wind, geothermal electric, and other technologies. The requirement has been a critical support in growing markets for these resources. The Clean Energy and Pollution Reduction Act of 2015 (SB 350) recently expanded California's RPS to require *fifty* percent renewables by 2030, and the legislature is now debating more ambitious targets still. With these and similar policy

supports, the last decade has seen existing renewable energy technologies take off to an unprecedented extent across the Western United States. Today, renewable energy development is introducing a new value calculus for drylands, even those without historical water rights (long a dominant influence on rural land values in the US West). Wind power has seen steady growth over the last decade, including in Imperial County. More recently, the solar energy sector has seen a remarkable upsurge (Knuth 2018) – particularly in the high-insolation drylands of Southern California, Nevada, and Arizona – and the Imperial Valley has become of California’s leading epicenters for solar development (Hernandez et al. 2015).

Value calculations and vulnerability in Salton Sea geothermal development

In 2015, the IID and partners released the Salton Sea Restoration and Renewable Energy Initiative (SSRREI), a novel proposal to not only restore the Salton Sea, but also to *fund* that restoration. The IID’s plan makes a major case for geothermal, a renewable energy resource that they and other supporters argue has been given short shrift in the recent wave of US solar and wind development. The Imperial Valley has six of the state’s twenty-five Known Geothermal Resource Areas (KGRAs), including a major area around the Salton Sea, most of it still currently underwater⁸ (Gagne et al. 2015; Haase 2016). The IID’s plan envisions a “restored” Salton Sea reengineered into a hub of renewable energy resource development – but simultaneously frames this development as a fix for other restoration challenges (Gagne al. 2015; IID 2015).

Making a bid for accumulation by degradation (Johnson 2010), the SSRREI reframes the lake’s shrinking size as an unexpected windfall. If the receding lake exposes 30,000 acres of playa between 2020 and 2030, 11,000 of those acres are likely to be within the Salton Sea KGRA –

thus newly open for production. Moreover, the infrastructure of geothermal plants would itself cover some of the playa exposed by the Sea's recession, reducing health-damaging dust emissions and leaving room for adjacent habitat construction. In an indication that this plan has serious traction, the Sea's most recent comprehensive plan retains space and access corridors for this geothermal development (James 2017). Besides geothermal energy, the SSREI also considers green energy-industrial development such as solar photovoltaic and solar thermal siting on the lakebed, algal biomass production for biofuels, and lithium extraction from geothermal brines.

The IID argues that although its geothermal plan still requires upfront investment from public authorities, it will eventually transition into an income-*generating* venture, recouping money invested and then producing revenue for the government and its private partners. On top of requested allocations from the State of California's massive drought-era water bond (Proposition 1) and climate cap-and-trade revenue (SB 535, which requires investment in disadvantaged communities), the IID's financing plan asks for a \$1 billion direct upfront investment from the state, as an equity stake in a public-private partnership with the IID, Imperial County, and private renewable energy companies (IID 2015). The state would thus directly stand to benefit from exploiting its geothermal resources, provided it directed a portion of the profits to the Sea's restoration. The IID suggests an additional \$1 billion of this self-financing from thirty-year revenue bonds, paying for upfront development and restoration costs out of revenue collected from geothermal leases. Besides direct investment, lease income, and taxable profits, the IID has scoured its prospective renewables landscape for other potential revenue streams. Notably, it proposed a surcharge on local geothermal specifically tagged for restoration activities. As a local developer explained in an interview:

The objective is that, and this is always going to be a fight, with the private sector, with producers of the energy, is that you just take a little bit of that margin, that profit that you make on a kilowatt hour... just give us one percent of your per kilowatt hour price, and allow that to go into funding additional improvements to restore the Sea. And...that actually becomes a lot of money.

At the time of this writing, entrepreneurial geothermal companies had already taken interest in these plans.⁹ However, the economic feasibility of the IID's geothermal-for-restoration plan is under question. The National Renewable Energy Lab's 2015 evaluation notes that renewable energy may not be as profitable for the region as the IID's projections indicate. NREL estimates \$1.5 billion of potential revenue – as opposed to the \$4.1 billion projected by the IID's own feasibility study (Gagne et al. 2015). According to the NREL report, charging a special restoration fee to funnel money to the Salton Sea may simply deter the development of local geothermal plants.

The plan to save the region's air and birds by generating restoration funding via geothermal development thus hinges on a critical—and contested—calculation of value. The success of the geothermal-for-restoration plan is by no means guaranteed. This introduces an element of speculative vulnerability that puts the health of the already-vulnerable residents of the region at risk.

Putting the Salton Sea to work: Deflected development in a green economy

Proposals for restoration-linked renewable energy development at the Salton Sea are particularly significant because they highlight novel ways that the Sea's crisis, and its status as a postnatural

space, are being made to do *work* both in and beyond desert California. Here, we follow political ecologists who call for scholarship examining the impacts and agendas of postnatural politics (e.g. Mansfield et al 2015; Collard et al 2015). In this section we describe how the Salton Sea's crisis—the looming threats to air quality and wildlife habitat—have been leveraged by various actors to support their agendas. First, the Sea's plight is being leveraged by Imperial Valley farmer-activists in their long-running struggle to maintain the valley's future, historically linked to irrigated agriculture and now facing new threats in a land rush on renewable energy sites. Second, the debates over restoration at the Salton Sea have significance for the shape of a green energy economy in and beyond California, as politicians reference the decline of the Sea to justify a more generally transformed energy development calculus.

On a local scale, the Imperial Valley's efforts to defend its historical water rights have used the Salton Sea as a political bargaining chip. These efforts, present in the IID's original negotiations around the QSA, have been given new fuel by the State of California's failure to secure promised restoration funds for the Salton Sea. In 2014, the IID petitioned the State Water Resources Control Board, arguing that if the state continued to renege on its promised restoration funding, the IID would be within its rights to halt water transfers to coastal cities (IID 2014; Roth 2015). At the same time, California's deep drought in the 2010s made these hardball water politics increasingly risky for the IID. The drought saw a wave of regulatory crackdowns on water overexploitation that were previously thought politically untenable, including urban water conservation requirements, forced fallowing of farmland across the state, and new regulation of groundwater extraction – causing some to question anew agriculture's large share of California's

water (Nicholls 2015). These disruptions to the political status quo presage further intensification of California water conflicts under climate change conditions (Hayhoe et al. 2004).

A renewables land rush and the politics of the pristine

On a regional scale, the Salton Sea has played a role in broader struggles around green energy and green development. California's late 2000s surge in large-scale renewable energy development was fueled both by state mandates and federal government policies, as the Obama Administration laid out a green economic development program in and after the post-2008 stimulus. Notably, the administration committed to site 20,000 megawatts of renewable energy on federal lands and waters by 2020, working with agencies like the Bureau of Land Management (BLM) to open up their massive land holdings to renewable energy siting – including a major swathe of never-developed public land in the California desert. Quickly, however, this policy provoked political blowback: environmentalists charged that it represented a rush on public lands with little consideration of the environmental costs of this “green” development. Critical scholars are increasingly adding their voice to this critique, pointing to utility-scale solar and wind installations' massive geographic footprints and potential for landscape transformation (Bridge et al. 2013; Mulvaney 2013; Huber and McCarthy 2017). In California, activists were particularly concerned with the renewable boom's potential to undo decades of efforts by environmentalists to reframe the Mojave and Sonoran deserts as a set of unique and sensitive ecosystems worthy of formal environmental protection.

Responding to environmental protests, in the late 2000s the State of California and the BLM initiated a large-scale planning process (the first of its kind) to evaluate renewable energy

development, especially on the state's "pristine" dryland habitats. So far, Phase I of the 2016 Desert Renewable Energy Conservation Plan (DRECP) plan has blocked siting renewables on more than ninety percent of the originally proposed federal land. Instead, the planning process has sought to deflect development (e.g., Hecht 2005) to land it classifies as already "disturbed," a categorization that opens up private farmland as a priority development site for renewables. This search for "win-win" opportunities for siting renewables on environmentally degraded land is a part of broader Obama Administration efforts, which targeted mining sites, urban brownfields, and other contaminated and devalued spaces. However, the DRECP plan quickly provoked outcry from farmers in places like the Imperial Valley. In Imperial County, the planning process initially targeted over 700,000 acres of private land for priority renewable energy development, a large portion of the Imperial Valley's irrigated farmland. This designation is now being contested by farmers and litigious grassroots organizations like Backcountry Against Dumps and the Protect Our Communities Foundation, who frame land conversions for renewables development as a new and serious threat to the agricultural future of the valley. At the time of this writing, the BLM under the Trump Administration is considering amending the DRECP to re-focus development on public desert lands. Final siting for renewables on California state and private lands is now being fought out in the DRECP's Phase II.

The geothermal-for-restoration plan thus seeks to make use of the Sea's postnatural status and its crisis in several ways. First, the IID has discursively deployed the Salton Sea's urgent restoration needs in appeals for broader shifts to California's renewable energy policy. In response to the plan's questionable economic feasibility, the IID has ramped up its advocacy with the State of California: if geothermal is not sufficiently profitable to save the Salton Sea, perhaps the state

should *make* geothermal more profitable via targeted subsidies. This regulatory transformation is arguably necessary for geothermal to compete with other renewable energy sources; more pointedly, it is required for the IID's speculation on geothermal profits to pencil out. While justifying their geothermal advocacy with gestures toward the general good, local politicians have consistently leaned on the Sea's crisis as a call for the state to reform its renewables policy. Second, the plan implicitly positions the Sea as a space that can be imagined as empty and conflict-free, making it an important substitute for both federal lands withdrawn from development and heavily contested private lands. In doing so, the plan leverages the Sea's degradation in order to "deflect development" away from better-defended terrain, echoing Hecht's concept of "sacrifice zones" (Hecht 2005), which we discuss in more depth in the conclusion.

Conclusion

In this paper, we have used the details of a particular regional political ecological case to provide a window into uses and abuses that ecomodernist, postnatural environmentalism can sustain in application. As Mansfield and Doyle (2017) suggest, this type of critical examination is a key task in a time when widespread adoption of the idea of the Anthropocene risks pushing more and more of the world into relativist ethical evaluations and utilitarian, overtly anthropocentric treatment. As we evaluate the case of the Salton Sea (and the region in which the Sea is materially and politically embedded) for broader lessons, situated evaluative judgments, and possibilities, we suggest a few initial takeaways.

We argue that this case illustrates several limitations of postnatural environmentalism. Despite the influence of postnaturalism and ecomodernism within conservation and restoration

communities, this is no universal, and certainly no universally beneficial, shift. Instead, this exploration demonstrates concrete ways that geographic *difference* and unevenness continue to matter within environmental politics on the ground. As we demonstrate, the Salton Sea's particular context and history matter: for example, the lake's exclusion from regulatory protections and inability to claim a clear historical baseline for restoration have certainly freed its managers to dream big and creatively in their ecological design and engineering visions. Indeed, many of the experiments surveyed here would be impossible in an environment more firmly ring-fenced with statutory protections. At the same time, the Salton Sea has suffered from this "freedom" and relativism: in its gradual degradation; in its particular vulnerability to neoliberal austerity as it became a problem case for the state; in the speculative opportunism of many green capitalist schemes to "save" it.

Indeed, we suggest that postnatural management is a key vector of "sacrifice" at and of the Salton Sea. Although Mansfield et al. (2015) caution that we must not simply assume that all such anthropogenic landscapes are by-definition sacrifice zones, the concept speaks to the Salton Sea's experience on multiple levels. This assertion holds true for both Hecht's (2005) sense of deflected development and, often, the more pointed formulations of place/population disposability and environmental racism advanced by environmental justice scholars after Bullard (1990) (e.g., Klein 2014). In this latter sense, Imperial Valley agriculture historically rendered the Salton Sea an ecological sacrifice zone by dumping its wastes in the system for a century (Voyles 2017). Moreover, Imperial Valley farmers and water managers invoke another – if more questionable – form of alleged sacrifice in the US West, as they combat pressures to cede settler colonial property rights to distant urban entities (McCarthy 2002; Walker 2003). These perceived takings include water transfers like the QSA as well as renewable energy development, fought by

some as an intrusive land grab for faraway power users (Brooks 2016). More worryingly still, we have emphasized how aptly Bullard's more classic environmental injustice conception fits here: in the final calculus, the lake's degradation will have markedly uneven consequences and stakes. If projects to save the Sea fail, the Imperial Valley's majority-poor and Latino human inhabitants will be on the front line of the impending public health hazards (Voyles 2017; Cohen 2014).

Following Hecht's (2005) sense of sacrifice zones further is equally enlightening. Hecht describes a case of anthropogenic landscapes placed into relation with Amazon conservation mandates and subjected to intensified agricultural production and environmental degradation in order to, in theory, "spare" the protected system (Brannstrom 2009; Oliveira and Hecht 2016). The Salton Sea's anthropogenic landscape is somewhat different, as is the type of capitalist intensification, supposedly non-extractive industrialization, proposed for it. Assessed as a local land use, there is nothing *inherently* degraded or degrading in IID's imaginary of a new second nature of green energy-industrial production and constructed habitat at the Salton Sea.

Nevertheless, this postnatural treatment is critically defined by the Sea's statutory non-protection and subordination to better-defended spaces, which include both "pristine" landscapes (desert areas protected by conservation assemblages and statutes) and alternate "disturbed" landscapes (farmland defended by agro-industrial interests).

This case also illustrates the ways in which ideas like the postnatural are taking a central role in the re(e)valuation of resources for green economic development, including the remaking of statewide energy policy. Exploring the role of large-scale renewable energy development as a leading face of that transformation illustrates the interplay between state and regional government and private development in what can be viewed as a resource grab (e.g., Fairhead et al. 2012). Public and private interests are coming together to push forward green capitalist

proposals that are technofuturist in outlook, accumulation-minded (while also state-sponsored, furthering accumulation for both private and public purpose), and overtly willing to engage in manipulation of environmental framings and categorizations in support of their projects. The valuation process includes redefining and reclassifying harms and goods and enclosing previously elusive spaces, with material impacts on the fish, birds, and humans who have previously relied upon the waste(d) commons (Cantor 2017). In this light, the relativity of the postnatural can be viewed as simply one conceptual tool being put to work in a broader project of shifting resource valuation.

While we have discussed how the postnatural can be put to work in the justification of green capitalist development, the Desert Renewable Energy Conservation Plan conversely demonstrates the continuing political power of traditional environmental(ist) dualisms and prohibitions. Some formulations of the postnatural turn imply that environmentalism's "Edenic" communities of practice will voluntarily cede their entrenched power as critiques and shifting conditions expose core fallacies and hidden politics (e.g., Robbins 2014). This case suggests that environmental managers may instead double down on their historical remit in the Anthropocene moment, hoping to bolster "islands of Holocene ecosystems" (Collard et al. 2015, from Kareiva et al. 2012) against both systemic destabilizations like climate change and proximal stressors – including those arising from ecomodernist green capitalism itself. In mitigating (for now) speculative ecomodernist ambitions for the California desert, the DRECP demonstrates that, however flawed, notions of the pristine continue to do work when supported by sufficiently forceful conservation assemblages and legal-regulatory apparatuses – a useful reminder for negotiating situated political responses and necessarily messy tactical alliances. In desert California and many regions like it, these assemblages may well provide the most immediate and

formally empowered line of defense against the excesses of technofuturist geoengineering and ecomodernist land grabs.

Finally, the Salton Sea's postnatural ecomodernist proposals are most immediately showing strain in characteristically neoliberal dimensions. First, public accountability is limited. That the Salton Sea's *symbolic* restoration program has persisted while the plan's *material* scope progressively shrinks should provoke disquiet. As yet, society has no mechanisms for holding postnatural managers to account for diminished engineering ambitions and failed design promises. Second, and perhaps more worrying still than the scaling back of what Salton Sea "restoration" actually signifies, is the growing tendency of accumulation imperatives to swamp other design features and considerations in these plans. The reasons are not particularly surprising: beyond enthusiasm and opportunism from the private sector, the push for entrepreneurial restoration schemes flows directly from neoliberal austerity and attacks upon the power of the state. Even as the Salton Sea's managers hope that promised resources from the State of California will materialize at the eleventh hour, their current design proposals have been thoroughly captured by entrepreneurial imperatives and fiscal financialization. Not only do these market schemes threaten to crowd out other functions of postnatural ecological design and constrain more creative and liberatory compositionist imaginaries, they present more immediate speculative dangers. To tie successful restoration to the success of geothermal development or any other market scheme at the Sea is to speculatively mortgage the region's environmental health to capricious market forces. If any one of multiple threats to these accumulation schemes materializes—if the State of California is unmoved by appeals to make geothermal more profitable, if electricity prices change dramatically and unexpectedly in the future, or if the Sea's new geothermal ventures fail – a common occurrence for start-ups in general and for capital-

intensive green economic start-ups in particular – the Salton Sea’s future could be effectively foreclosed.

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¹ Notably, the San Diego County Water Authority (SDCWA), seeking to break its dependence upon the Los Angeles-based Metropolitan Water District (MWD), increasingly eyed water from the Colorado River.

² IID holds the Colorado River's single largest water right, 3.1 million acre-feet per year – almost twenty percent of all Colorado River allocations, and seventy percent of California's entire share. The IID also acquires water very cheaply: in 2015, the IID acquired its water for free from the federal government (and charges customers a mere \$20 per acre-foot to cover infrastructure maintenance costs), while San Diego's SDCWA paid \$624 for the same amount of Colorado River water (SDCWA 2016).

³ Over a quarter of which are over 1,000 acres in size (US Census of Agriculture 2012) and sixty percent of which were absentee by the early 2000s (Jenkins 2002).

⁴ Imperial County's population was 83.8 percent Latino in 2016 (US Census 2016).

⁵ Recognizing water transfers' serious threat to the lake, the QSA stipulated that the IID would supply up to 53,000 acre-feet of water to the Salton Sea annually until the beginning of 2018 – 'mitigation water' intended as a stopgap measure.

⁶ Along with complimentary smaller scale restoration projects, including Red Hook Bay and the Torres Martinez wetlands restoration projects.

⁷ Many of these projects have been organized through the Salton Sea Authority, a Joint Powers Authority composed of representatives from the IID, Coachella Valley Water District, Riverside County, Imperial County and the Torres Martinez Desert Cahuilla Indians.

⁸ NREL researchers estimate that the Salton Sea region could produce up to 1.8 GW of geothermal energy by 2030, with about 1.3 GW in the Salton Sea KGRA.

⁹ For over fifteen years, energy generators had run a relatively static set of geothermal operations at the Sea, dominated by Warren Buffett's CalEnergy. However, in recent years, the region has attracted new business; for example, ventures experimenting with technologies to mine geothermal brine for resource recovery. An Australian company called Controlled Thermal Resources has recently entered the region with plans for a massive new geothermal facility, five times larger than the Sea's existing plants.